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ABSTRACT

This paper focuses on the process of preparing and delivering courses using compressed video by considering research related to how learners adapt in new environments, the approval process, the environment, and course delivery techniques. Over a two-semester period, a survey was administered to students in distance learning courses to address the issues of adjustment to the environment and technology, methods and interactions utilized by the instructor, and related experiences which provide the framework for adapting to the distance learning classroom. The survey produced results in three areas: feelings about the distance learning environment, factors which helped make sense of the distance learning environment, and technologies of the distance learning environment. Six tables show results in terms of how students felt on the first day by gender and by age; how students felt on the last day by gender and by age; how students cope with the distance learning environment by gender and by age. Recommendations for online instruction are offered related to instructor training, adapting courses to the distance learning environment, assisting students in making sense of distance learning technology, teaching methods, learning and introducing new technologies and adjusting to meet student needs. (Contains 33 references.) (AEF)

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Taking Instruction Online: The Art of Delivery

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The notion that people seek to make meaning out of their world, whether it is the classroom or the living room, is not a new one. Educational philosophers and learning theorists have attempted to explain how learners learn and construct meaning from instruction or the classroom. *Stimulus-response* theorists (Thorndike, Guthrie, Pavlov—as cited in Hilgard & Bower, 1966; Watson, 1960; and Skinner, 1960) view learners as reactive, passive robots only responding when stimulated by something outside of themselves. Reese & Overton (1970) propose to call this the mechanistic world view—any change in the learners comes from outside of themselves. *Organismic* theorists (Dewey, Tolman—cited in Kingsley & Garry 1957; Lewin, 1951; Combs & Snygg, 1959; Bruner, 1968; and Freire, 1970), on the other hand, contend that learners are active, organized entities who seek meaning from their own experiences to solve problems; to create relationships between signs and desired goals; to manipulate information and knowledge to fit new tasks; and to evaluate whether the way they have manipulated information is adequate to the task. The desire for self-actualization is the driving force which motivates the behavior of organismic learners.

Constructivism is a theory about knowledge and learning that draws on a synthesis of current work in cognitive psychology, philosophy, and anthropology (Kuhn, 1962; Piaget, 1970; Sigel & Cocking, 1977; von Glasersfeld, 1981; Bruner, 1985; Gardner, 1991). Constructivist theory defines knowledge as temporary, developmental, socially and culturally mediated, and non-objective. Learning from this perspective is a self-regulated process which seeks to resolve inner conflicts that arise from concrete experience, collaborative discourse, and reflection (Brooks & Brooks, 1993). Simply stated: learners construct their own internal understandings of the world in which they live.

The concept of adults as learners emerged both in this country and in Europe shortly after the end of World War I; however, only in the last few decades has the theory of adult learning matured. Knowles, Thorndike, Sorenson, Tough, Lindeman, Cross, Darkenwald & Merriam, and Houle, among others, have written extensively on the idea of the adult learner. The term, andragogy, has appeared as the label which differentiates adult learning theory from pedagogy, youth learning theory. The andragogical model of the adult learner is based on the assumptions that adults need to know; adults have a self-concept of being responsible for their own decisions and for their own lives; adults come into education with a greater volume and a different quality of experience from youth; adults come ready and motivated to learn what they need to know in order to cope; and while adults are aware of external motivators (better jobs, promotions), it is internal pressures (job satisfaction, self-esteem, quality of life) that are the most potent motivators (Knowles, 1990). Adult learners cannot help but try to make sense of their environments.

Distance Learning Theory

Distance learning seeks to provide education at a distance. Inherent in this telecommunications technology is the introduction of activities, tools, and instructional designs for which the learner may have no frame of reference. The normal model of one teacher and a single class of students in the self-contained classroom does not fit the distance learning training model. The television camera provides the teacher a view of multiple classrooms in which various kinds of learning media must be implemented. The old classroom star configuration—the lecturer reaching a finite number of students—does not apply in a situation where the teacher only has face-to-face interaction with students via the television screen. Student and teacher learning and interactions are changed (or, at the least, modified) in the distance learning environment.

Tough (1979) has suggested that when learners approach a new learning task [e.g., understanding the distance learning classroom], they cast around for some analogous situation from the past to give guidance as to how to approach this new situation to determine the benefits to be gained in learning from it. Students trying out this medium for the first time receive little guidance about how to participate, organize their lives, interact with online materials, reflect, express themselves online, and use the online experience for successful completion of the course. Smith (1982) has suggested that learning-how-to-learn

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(LHTL) strategies may assist students and teachers to make sense of a new learning environment. LHTL is defined by Smith as "possessing or acquiring the knowledge and skill to learn effectively in whatever learning situation one encounters" (p.19). LHTL theory suggests that learners rely on a "bag of tricks", tried and true approaches, prior learning strategies and tactics, and what worked in other situations to make sense of a new environment. Eastmond (1995) has indicated that these factors may include prior experience, the role of the support person, a frame of reference, relationships between and among students and teachers, acclimation to information and sensory overload, role of participation, and processing the small picture.

Recently, Sherry and Wilson (in Khan, 1997) have offered another view of learning: *transformative*. The transformative view of learning combines the ritual view of instruction which communicates and perpetuates tradition with the transmission model of instructor-as-expert deliverer of instruction. In the transformative view, both the teacher and the student alike are *transformed* into learners by the process of communication. A two-way dynamic comes into being as distance learning modalities are used to deliver instruction. The learner can pause and reflect on what he or she is learning; the instructor can develop new understandings of the subject and the learner.

This paper focuses on the process of preparing and delivering courses using compressed video by considering research related to how learners adapt in new environments, the approval process, the environment, and course delivery techniques. Implications for pre-service and in-service instruction, graduate teacher education faculty, and faculty and staff development will be offered.

Methodology

Over a two-semester period, a survey has been administered to students in distance learning courses to address the issues of adjustment to the environment and technology, methods and interactions utilized by the instructor, and related experiences which provide the framework for adapting to the distance learning classroom. Specifically, the survey has focused on answers to the following questions:

1. How do students make sense of distance learning technology?
2. What mechanisms do students employ to adapt to a media-rich learning environment?
3. What external or internal motivations allow students to succeed in a media-rich learning environment?
4. What social interactions are employed to help students master and use the technology in the distance learning classroom?

Based on the findings from the surveys, implications for training of faculty and suggestions for techniques for taking courses and methodologies online are offered.

Findings

The survey instrument entitled, *Adapting to the Distance Learning Environment*, produced results in three areas: feelings about the distance learning environment, factors which helped make sense of the distance learning environment, and technologies of the distance learning environment. The population for the surveys were all students enrolled in distance learning courses taught by compressed video instructors. Statistically significant results from the surveys were determined using the *chi-square* analysis. Since the responses to the questions on the surveys yielded frequency data, the *chi-square* analysis was appropriate.

Feelings about the DL environment

The first part of the questionnaire asked students to describe their feelings about the distance learning environment on the first day of class and on the last day of class. The factors used in this part of the survey were gathered from the literature related to the conceptual framework for this paper. The responses from the students to the statements in this part of the survey reveals the following results:

First day results. From the responses to the factors, data in Table 1 show that eight factors appear to describe the students' feelings about the distance learning environment on the first day of class when analyzed by gender. Demographics show that 68.6% of the respondents were female, 30.4%, male. Only two of the factors are mentioned by both groups— comfortable and motivated.

Table 1.
How Students Felt on the First Day By Gender

Factor	Semester 1 *p* *n=290*	Semester 2 *p* *n=345*
apprehensive	0.031	n/a
comfortable	0.018	0.052
excited	n/a	0.011
hopeful	n/a	0.045
motivated	0.005	0.065
neutral	n/a	0.045
proud	0.084	n/a
supported	n/a	0.079

Table 2 shows the feelings of the respondents when analyzed by age. Demographics show that the students were represented by the following age groups: 18-25 years of age, 41%; 26-35 years, 33%; 36-45 years, 18%; and 46-54 years, 8%. In this instance, nine factors appear to have significance for the students; however, none of the factors was the same for both groups.

Last day results. Students were asked to denote factors which appear to describe the feelings of the students on the

last day of class in the distance learning environment. Table 3 illustrates that nine factors appear to describe the students' feelings on the last day of class; none of the factors was the same for both groups.

Table 2.
How Students Felt on the First Day By Age

Factor	Semester 1 p n=290	Semester 2 p n=345
apprehensive	0.001	n/a
awestruck	0.073	n/a
comfortable	n/a	0.052
curious	0.048	n/a
hopeful	n/a	0.090
lonely	0.048	n/a
motivated	0.048	n/a
recognized	n/a	0.015
surprised	n/a	0.001

Table 3.
How Students Felt on the Last Day By Gender

Factor	Semester 1 p n=290	Semester 2 p n=345
apprehensive	n/a	0.013
awestruck	n/a	0.039
curious	n/a	0.036
intimidated	0.044	n/a
isolated	0.053	n/a
lonely	n/a	0.021
overwhelmed	0.019	n/a
proud	0.089	n/a
surprised	n/a	0.002

Table 4 illustrates how students felt on the last day of class when analyzed by age. Table 4 presents the nine factors which describe their feelings on the last day of class. Only one factor—apprehensive—appears in both semesters.

Table 4.
How Students Felt on the Last Day By Age

Factor	Semester 1 p n=290	Semester 2 p n=345
apprehensive	0.008	0.054
comfortable	n/a	0.001
fearful	n/a	0.005
intimidated	n/a	0.046
lost	n/a	0.097
motivated	n/a	0.025
neutral	0.001	n/a
overwhelmed	n/a	0.003
recognized	n/a	0.029

Data from these four tables have significant bearing on the training and delivery of instruction in the compressed video classroom.

Factors which helped make sense of the DL environment

When asked in part two of the survey which factors helped them make sense of the distance learning environment, the students responded to a series of 41 statements gathered from LHTL theory and distance learning research. Table 5 exhibits the factors which appear to have helped students cope with making sense of the distance learning classroom when presented by gender. Only one factor—encouraged to participate—was mentioned by students in both semesters. Each of the other nine factors was different for each semester.

Table 5.
How Students Cope with the DL Environment by Gender

Factor	Semester 1 p n=290	Semester 2 p n=345
Time of course fit schedule	0.056	n/a
On-site support	0.026	n/a
Access to materials	0.025	n/a
Encouraged to participate	0.041	0.025
Motivated to study	0.097	n/a
Participated more	0.047	n/a
Needed more explicit directions	0.082	n/a
Able to monitor own learning	n/a	0.082
No frame of reference	n/a	0.042

Table 6 demonstrates the feelings of students related to adjustment to the DL when analyzed by age. This table shows that seventeen factors appear to have statistical significance. Only two of the factors—on-site support and encouraged to participate—were mentioned by both groups. The other fifteen factors also appear to have vital significance for delivery of instruction via the compressed video environment.

Technologies in the DL classroom

In part three of the survey, questions dealt with the technologies of the distance learning environment. Specifically, students were asked to identify the technologies the *distance learning instructor used* during the course and the technologies *they used* and *mastered* during the course. Additionally, students were asked to identify the technologies they had seen *used outside of the distance learning classroom*.

It appears from the responses by the students that *instructors used* computers (83.1%), the document camera (76.7%), the TV (71.6%), the podium tablet (70.3%), the VCR/Video (65.9%), e-mail (59.8%), and presentation software (52%) in the distance learning environment.

However, the only technology *students used* was the computer (73.6%). To a lesser degree, students used e-mail (47.3%), the Internet/WWW (44.6%), and the TV (13.9%). It is interesting to note that the students used the Internet/WWW more often than the instructors (33.1%, instructors versus 44.6%, students).

Table 6.
How Students Cope with the DL Environment By Age

Factor	Semester 1 *p* n=290	Semester 2 *p* n=345
Interaction of instructor helped me adjust	0.011	n/a
Prior experience	0.083	n/a
On-site support	0.051	0.001
Encouraged to participate	0.085	0.020
Atmosphere conducive to learning	0.058	n/a
Learned name	0.004	n/a
Encouraged to ask questions	0.072	n/a
Able to monitor own learning	0.026	n/a
Encouraged to reflect	0.026	n/a
Motivated to study	0.064	n/a
Goals & aims communicated	n/a	0.083
Distance to travel	n/a	0.001
DL environment fit learning style	n/a	0.070
Convenience	n/a	0.001
Instructor attitudes and skills	n/a	0.014
Location	n/a	0.001
Flexibility of DL	n/a	0.062

When asked which technologies students felt they *mastered* during the distance learning course, students felt that, to some extent, they mastered the computer (32.1%) and e-mail (30.7%). *Outside* of the distance learning classroom, students saw the following technology used: computer (80.1%), the Internet/WWW (66.2%), VCR/Video (65.9%), TV and word processing software (62.2%), and spreadsheet software (57.4%).

Recommendations for Taking Instruction Online

Results from the two iterations of the distance learning survey indicate that the following techniques may prove to be helpful for instructors in the compressed video environment:

1. Instructors must have training which focuses on the apprehensions, fears, and coping mechanisms which students exhibit and apply during the first days in the distance learning environment. Learning students' names, providing explicit directions for completing assignments, encouraging students to use the site facilitators for technology instruction, and encouraging students to participate are only a few of the devices which may prove helpful to students.
2. Instructors must meet certain guidelines for adapting courses to the distance learning environment in their course syllabi. Specifically, introducing students to the technology in the distance learning environment and how it works may allay some students' fears; providing a technology back-up plan when the technology fails is essential; requiring students to *use* the technology in the classroom from the very first day begins to ease students' fears and apprehensions—introducing themselves at the podium by looking into the camera and using email are two critical technologies for the first day; and continuing to require students to use and master the technology will prepare them for the high-tech classroom and workplace. Approval of courses should not be forthcoming until and unless the instructor has proven that adaptation factors and technology factors have been adequately addressed.
3. Instructors also may assist students to make sense of and adapt to the distance learning technology through interaction with peers, being encouraged to participate in discussions, and relying on their own internal motivations to learn independently, to monitor their own learning, to use life experiences, and to employ a high degree of autonomy. These findings support the adult learning and LHTL theories which formed the conceptual framework for the study.
4. Instructors must take the time to employ a wide variety of teaching methods to assist students in the distance learning environment. Small groups, individual presentations, asking questions, classroom discussions, and inter-site group work are possible and successful in the compressed video environment *if* the instructor will take the time to think through the process. Relying on the star configuration in the compressed video environment will not get students involved and excited about their learning.
5. Instructors must learn and introduce new technologies into instruction. Email is becoming a very common way for students to communicate outside of class with instructors—it also provides the opportunity for instructors to extend learning and require students to reflect on in-class exercises and materials. However, other Web-based discussion thread sites are available to instructors. In these discussion thread sites, students can read other students' thoughts and reflect on and respond to the discussions in an appropriate manner. To this end, continuing education for DL instructors is imperative.
6. As students in the DL environment are surveyed about their feelings and coping mechanisms, instructors will need to adjust materials, methods, and technology to continue to meet the needs of students. A certain level

of maturity can be noted in the differences in the responses of the students in this research.

Distance learning holds the promise of overcoming time and distance restraints for learners; for improving course design and delivery techniques; for focusing intense attention on learners' needs; for reflecting on how teachers teach and prepare instruction; and for determining how individuals adapt to new environments. All of these are compelling reasons for learning as much as possible about distance learning as a training delivery system and how all of the participants in the distance learning classroom adapt to the environment.

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